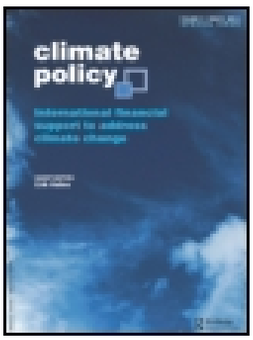

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Conditional nationally determined contributions in the Paris Agreement: foothold for equity or Achilles heel?

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ABSTRACT

The Paris Agreement's success depends on parties' implementation of their Nationally Determined Contributions (NDCs) towards the Paris Agreement's goals. In these climate action plans, most developing countries make their mitigation and adaptation contributions conditional upon receiving international support (finance, technology transfer and/or capacity building). While provision of support for NDC implementation could enhance equity among countries, the feasibility of NDC implementation might be challenged by the large number of conditional NDCs. This paper addresses the implications of this tension based on an analysis of all 168 NDCs. We find that feasibility is challenged because conditions applied to NDCs are often not well defined. Moreover, the costs of implementing all conditional contributions are too high to be covered by existing promises of support from developed countries, even if the entire annual $100 billion of climate finance were earmarked for NDC implementation. Consistent with principles of equity and the prioritization in the Paris Agreement, a higher proportion of Least Developed Countries (LDCs) and Small Island Developing States (SIDS) have conditional NDCs than do other countries. However, differences between the distribution of countries requesting support and those currently receiving support, in particular among middle-income countries, demonstrates potential tensions between feasibility and equity. The article concludes with recommendations on how cost estimates and updated NDCs can be strengthened to ensure support for NDC implementation is targeted more equitably and cost-effectively.

Key policy insights

- Support requested by developing countries to implement conditional NDCs far exceeds existing funding pledges.
- Differences between existing patterns of financial assistance, and those implied by requests under conditional NDCs, mean that supporting NDCs may require a significant shift in provider countries' priorities for allocating climate finance. This may challenge feasibility.
- The Paris Agreement's provisions on prioritizing LDCs and SIDS offer valuable guidance in making difficult choices on allocating support.
- To increase the likelihood of attracting support, developing countries (assisted by capacity building as needed), should include credible cost estimates in future NDCs and formulate investment plans.
- By outlining plans to mobilize support in their NDCs, developed countries can reassure developing countries that raising the ambition of NDCs is feasible.

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1. Introduction

Nationally Determined Contributions (NDCs) were key to securing the adoption of the Paris Agreement in 2015 and will be instrumental to implementing it over the coming decades. These climate action plans have three key features. First, NDCs are universal: virtually every country that is a party to the United Nations Framework Convention on Climate Change (UNFCCC) has submitted an NDC.[1] Second, NDCs give countries significant flexibility to tailor their ambitions to national circumstances and priorities. In combination with countries' widely varying greenhouse gas (GHG) emissions, vulnerabilities, capacities and levels of development, the limited guidance for NDC formulation provided by the Conference of the Parties (COP) caused NDCs to vary in scope and content (Mbeva & Pauw, 2016). Third, the Paris Agreement creates five-yearly cycles of review and updating that are designed to ensure that NDCs become more ambitious over time (UNFCCC, 2015a, Articles 4.3 and 4.9).

This article addresses the implementation of NDCs, or parts of NDCs, that the submitting Parties have made conditional upon receiving international support in the form of finance, technology transfer and/or capacity building.[2] Of the 168 NDCs submitted to the UNFCCC at the time of writing, 136 are conditional on one or more kinds of support (see Section 4). Conditionality is thus a critical but not yet thoroughly analyzed aspect of NDCs (Hedger & Nakhooda, 2015; Pauw et al., 2018; Zimm & Nakicenovic, 2019).[3] As Section 2 will explain, support is a central and long-standing aspect of UN climate negotiations, and a key tool for improving equity and ambition (see De Coninck & Bhasin, 2015; Pauw, Bauer, Richerzhagen, Brandi, & Schmole, 2014; Pickering, Jotzo, & Wood, 2015; Rajamani, 2016), including in the context of NDCs (Lehr, Schalatek, & Keller, 2019).

However, if implementation conditions set out in NDCs are infeasible to fulfil or inequitable in practice, they could become the Achilles heel, or weak point, of the NDC model. Such shortcomings would challenge both the implementation of current NDCs and prospects for increasing the ambition of future updates of NDCs. Rather than looking at the technical feasibility of NDCs (which requires detailed analysis of individual NDCs and countries' circumstances) this paper aims to understand the political and financial feasibility and equity of the conditions set out in NDCs at an aggregate level.

Section 2 first describes theoretical justifications for support, its history in the UN climate negotiations, and current allocation patterns. Section 3 describes the methods for assessing the equity and feasibility of conditional NDCs. Section 4 presents the results of the empirical analysis and Section 5 concludes.

2. Provision of support in the UN climate regime

2.1 Equity and feasibility of international support

Many scholars see equity as a key reason for providing international support to address climate change (Morgan & Waskow, 2014; Rübbelke, 2011). One prominent equity-based justification for providing support is *solidarity* between wealthier or higher-capacity countries and those that are poorer or have less capacity to deal with climate change. A second major justification is moral *responsibility* on the part of historically high-emitting countries to remedy harm those emissions have caused (even if liability is contested, e.g. in the case of adverse impacts of past GHG emissions) or to prevent causing future harm (see generally Dellink et al., 2009; Klöck, Molenaers, & Weiler, 2018).

In theory, any transfers from wealthier to poorer countries will enhance distributive equity internationally. However, theoretical perspectives vary on what constitutes an equitable distribution of support and how equity should be weighed against other factors. Moreover, although the 1992 Convention operationalized equity through the principle of 'common but differentiated responsibilities and respective capabilities' (CBDR-RC) (UN, 1992, Article 3.1),[4] the UNFCCC has never formally adopted criteria to measure equity.

There is widespread agreement among scholars and policy-makers that, as a matter of equity, support for adaptation should be prioritized for countries most vulnerable to climate change (Ciplet, Roberts, & Khan, 2015; Grasso, 2010; see also section 2.2 below). Some argue that since climate change mitigation delivers a global public good, mitigation finance should flow to those countries that can reduce emissions at lowest cost (Bagchi, Castro, & Michaelowa, 2016). Others consider that because mitigation also delivers local goods (e.g. reductions in urban smog and energy poverty), consideration should also be given to supporting countries

with the least capacity to fund domestic mitigation measures (Halimanjaya, 2015). These two sets of countries are often different: while low-cost opportunities to reduce emissions are mostly found in rapidly emerging economies, the countries with the least financial capacity include LDCs and other low-income countries.

A key concern for the mobilization of international support is that tensions may arise between equity and feasibility, understood here as the likelihood that a given level of funding will flow to recipient countries. This resembles the tension identified in the broader development literature between allocating funding according to recipient need (related to equity) or donor interest (related to feasibility), with the two considerations not always aligned. Donor governments will generally have a stronger incentive to allocate aid to countries that co-benefit the donor country, and will find it easier to justify such allocations to domestic constituencies (Berthélemy, 2006; McKinley, 1978; see also Doucouliagos & Paldam, 2009 for a comprehensive review of this literature). Given that providers of finance cannot be legally compelled to support particular recipients, providers retain a significant amount of discretion over their allocation decisions. This means that requests for support that align with providers' preferences are more likely to be fulfilled. Providers' preferences may not always follow principles of equity but may reflect other motivations. Three of these motivations apply specifically to the case of climate-related finance. First, providers may wish to support delivery of global public goods such as mitigation, which benefits both providers and recipients (Kaul, Grunberg, & Stern, 1999; Rübbelke, 2011). Second, Bagchi, Castro, and Michaelowa (2017) find that climate-related aid has sometimes been used by industrialized countries as a bargaining tool to gain developing countries' support in climate negotiations (see also Ciplet et al., 2015, p. 78). Third, provider countries may wish to pursue their own commercial or political self-interest. For example, support might help to promote export markets, influence technology-related regulations, manage spheres of influence, or promote political alliances, even if those are unrelated to the cooperation problem at hand. For example, Weiler, Klöck, and Dornan (2018) find that recipient countries are more likely to receive adaptation aid from countries that are trading partners or with whom they have a former colonial relationship. These findings suggest that tensions between feasibility and equity could also arise in implementing the support conditions attached to NDCs.

2.2. Support in the UN climate negotiations

Support, and climate finance in particular, has been one of the most contentious issues in the climate change negotiations. Under the Convention, developed countries pledged 'new and additional' finance to support developing countries in preparing their national communications to the UNFCCC, as well as the implementation of measures to combat climate change (Article 4.3). The Convention's provisions on support recognize that giving effect to CBDR-RC involves more than a simple binary distinction between developed and developing countries, and encompasses multiple forms of differentiation according to countries' circumstances (Bodansky, Brunnée, & Rajamani, 2017, p. 28). Thus the Convention calls on developed countries to assist particularly vulnerable developing countries in meeting the costs of adaptation (Article 4.4) and to 'promote, facilitate and finance' technology access and transfer to 'other Parties, particularly developing country Parties' (Article 4.5). Finally, the Convention states that its effective implementation by developing countries 'will depend' on the effective implementation by developed countries of their commitments on finance and technology support, taking 'fully into account that economic and social development and poverty eradication are the first and overriding priorities' of developing countries (Article 4.7). This provision falls short of developing countries' calls for their obligations to be legally contingent on the receipt of support (Bodansky et al., 2017, p. 131). Rajamani (2005, p. 104) argues that, pursuant to the principle of common but differentiated responsibilities, developing countries remain obligated to fulfil their commitments under the Convention even if support is not forthcoming.

In the 2009 Copenhagen Accord, developed countries for the first time quantified a pledge to mobilize climate finance: US$100 billion annually by 2020 to support developing countries' mitigation and adaptation[5] 'in the context of meaningful mitigation actions and transparency on implementation'.[6] Ever since, scaling up climate finance towards this $100 billion target and the accounting of financial flows have been high political and operational priorities for the negotiations (Weikmans & Roberts, 2017). These and other negotiations on climate finance may have prompted developing countries to include conditionality in their NDCs in the run-up to the Paris Agreement.[7]

Table 1. Countries prioritized for support in the Paris Agreement.

	Countries prioritized for support	Country groups mentioned
Climate finance (cross-cutting)	• Particularly vulnerable countries (Art 9.4)	• LDCs • SIDS
	• Those with significant capacity constraints (Art 9.4)	• LDC • SIDS
Mitigation finance	• Not specified*	• Not specified*
Adaptation finance	• Countries that are particularly vulnerable to the adverse effects of climate change (Art 7.6)	• Not specified*
Technology transfer	• Not specified (Art 10) • Countries with specific needs and special situations (Preamble)**	• Not specified (Art 10) • LDCs (Preamble)**
Capacity building	• Countries with the least capacity (Art 11)	• LDCs
	• Particularly vulnerable countries (Art 11)	• SIDS

*Prioritisation for general cross-cutting climate finance still applies. **In international treaties, preambular text generally has less legal weight than the text of the Articles.

The Paris Agreement establishes a strong link between support and the degree of effectiveness and ambition of developing countries' actions (Voigt & Ferreira, 2016). The Agreement recognizes that support is needed for effective implementation of the Agreement (Article 3); allows for higher ambition in developing countries' actions (Article 4.5); and increases the effectiveness of adaptation planning (Article 7.13).

The Paris Agreement also specifies LDCs (Least Developed Countries) and SIDS (Small Island Developing States) as countries that should be prioritized for support (see Table 1). Scaled-up finance from developed countries should aim to 'achieve a balance between adaptation and mitigation', and take into account the needs of developing countries, 'especially those that are particularly vulnerable […] and have significant capacity constraints, such as the [LDCs] and [SIDS]' (Article 9.4). In contrast to the Cancún Agreements (para 95), Africa is not explicitly mentioned as a priority for support in the Paris Agreement (UNFCCC, 2011).

The 2018 Katowice Climate Package, which sets out the 'rulebook' for the implementation of the Paris Agreement, acknowledges only implicitly the country prioritization set out in the Agreement. For example, on support for NDC implementation, the Rulebook states that support will be provided to developing countries to implement Article 4 (on mitigation and NDCs) in accordance with Articles 9, 10 and 11 of the Paris Agreement (UNFCCC, 2018). The articles on climate finance (Article 9) and capacity building (Article 11) include explicit references to LDCs and SIDS (see Table 1). Although the Katowice Climate Package clearly emphasizes the primacy of mitigation in NDCs (Lehr et al., 2019), it also claims to be 'without prejudice' to the inclusion of other components (UNFCCC, 2018). Other such components could include adaptation, capacity-building, climate finance and technology transfer, as argued by developing countries (International Institute for Sustainable Development [IISD], 2015).

2.3. Priorities for allocating existing support

Available evidence on existing patterns of climate finance shows that countries that provide support have a mix of allocation priorities. Around 65% of climate-related development finance flows to middle-income countries, compared with only 20% to LDCs (OECD, 2018a). Allocation priorities may vary across provider countries. For example, multilateral development assistance is typically less oriented towards donors' strategic interests than bilateral assistance (McLean, 2015). Providers have more discretion over bilateral support than over support channelled through multilateral climate funds. Since bilateral support makes up the majority of public climate finance (UNFCCC Standing Committee on Finance, 2018), we may expect that bilateral providers' strategic motivations will still have a significant influence over the global allocation of support.

2.3.1. Mitigation finance

Mitigation finance makes up the large bulk of private and overall climate finance, comprises more than half of public climate finance, and mostly flows to countries with high and fast-growing emissions (UNFCCC Standing Committee on Finance, 2018). This distribution is often interpreted as reflecting provider countries' preference for the global public good secured by mitigation (Rübbelke, 2011). Halimanjaya (2015) finds that a mix of factors is associated with higher receipts of Official Development Assistance (ODA) for mitigation, including higher emissions intensity, lower income per capita and better governance (see also Bagchi et al., 2016; Kim, 2019).

2.3.2. Adaptation finance

The distribution of adaptation finance is somewhat different, with some studies finding that vulnerable countries do receive more ODA for adaptation than others (Bagchi et al., 2016; Weiler et al., 2018). Between 2010 and 2015, more adaptation-related development finance commitments were allocated to low income countries and LDCs than to higher-income groups, both in aggregate and per capita terms (OECD, 2017).

2.3.3. Technology transfer and capacity building

Data on the geographic distribution of technology transfer and capacity building support are less readily available and are complicated by the fact that both types of support may involve non-financial (in-kind) as well as financial components (Garrett & Moarif, 2018). Accordingly, it is difficult to identify clear trends in allocation priorities for these types of support. However, available data suggests that the diffusion of mitigation technologies to emerging economies – in which the bulk of global emission increases are expected – has dominated the rise in technology transfer over the last twenty years. LDCs are still largely excluded from international technology flows, mostly because of their negligible participation in recent economic globalization (Glachant & Dechezleprêtre, 2017). Evidence from developed countries' reports to the UNFCCC suggests that the bulk of capacity building support is directed towards adaptation, but it is less clear which income groups receive more support (UNFCCC, 2016).

3. Method

To the extent that scholarly literature deals with conditions associated with international funding, it primarily addresses 'conditionalities' set by providers rather than recipients (Molenaers, Dellepiane, & Faust, 2015). Fridahl, Hagemann, Röser, and Amars (2015) provide one of the few exceptions: they explore the relationships between providers' and recipients' objectives in relation to developing countries' requests for support to implement Nationally Appropriate Mitigation Actions (NAMAs). Their study focuses mainly on parameters such as sectoral focus and project modalities, whereas our focus is on recipients' conditions for NDC implementation in terms of adaptation finance, mitigation finance, capacity building and technology transfer.

This article analyses all 168 NDCs submitted as of June 2019 based on the NDC Explorer. This online, interactive tool aims to enhance transparency and comparison of NDCs by using a universal set of categories to capture the diversity in scope, content and level of detail of NDCs (see Pauw et al., 2016).

To better understand whether the conditions set out in NDCs are feasible and equitable, we make the following key assumptions:

(1) The *feasibility* of NDCs receiving international support is higher if:
   (a) the conditions are clearly expressed (section 4.1);
   (b) the aggregate costs could, in theory, be implemented with the annual $100 billion climate finance target (section 4.2);
   (c) countries with conditional NDCs are eligible for support under the UNFCCC (section 4.3); and
   (d) the distribution of requested support is compatible with the distribution of existing flows of support (section 4.4).
(2) The *equity* of requests for support for NDCs is higher the more the distribution of these requests addresses the prioritization for support of LDCs and SIDS under the Paris Agreement (section 4.5).

Regarding the clarity of NDCs (element 1a), neither the Paris Agreement nor the Katowice Climate Package provides guidance on what 'clear' conditions might consist of (UNFCCC, 2018). While our analysis does not provide a quantified benchmark for assessing clarity, we provide illustrative evidence on challenges associated with ascertaining the extent to which NDCs are partly or fully conditional, and how conditions relate to cost estimates.

The costs element (1b) is addressed by calculating average cost estimates for adaptation and mitigation where these are contained in NDCs and by applying these to those NDCs that are conditional upon financial support. Cost estimates on technology transfer and capacity building are sparse in NDCs and therefore not analyzed. Cost estimates of eight countries that only provide one single number for adaptation and mitigation combined are also excluded because we could not perform the required cost breakdown into adaptation and mitigation components (these combined cost estimates vary from $0.06 billion in São Tomé and Príncipe to $73.04 billion in Egypt). Based on this comparison, we identify whether conditional NDCs could, in theory, be implemented within the annual $100 billion target, if we assume that this target will be extended over the decade 2021–2030 (resulting in overall funding of $1 trillion)[8] and that all climate finance will be directed towards conditional NDCs.

The eligibility element (1c) is addressed by analyzing whether the countries that make their NDC conditional upon support are eligible for receiving support under the Paris Agreement, understood here as non-Annex I (developing) country parties to the UNFCCC.

Finally, feasibility element 1d analyses the compatibility of conditional NDCs with current practices for allocating support. It compares (i) the percentage of countries in selected country groups (LDCs, SIDS and the four income group categories used by the World Bank) that make their NDC conditional with (ii) the percentage of countries in each group that have received adaptation and mitigation ODA. As in previous studies on climate finance allocation (e.g. Bagchi et al., 2016; Halimanjaya, 2015; Weiler et al., 2018), we use the OECD Development Assistance Committee (DAC)'s data on ODA and its 'Rio Markers' system for classifying aid that is related to multilateral environmental agreements in order to analyse mitigation and adaptation finance flows (OECD, 2018b). We take the average ODA flows for the years 2013–2016 as an indicator of current allocation practice, focusing on those flows that have adaptation or mitigation as their 'principal' objective as done in previous studies. Private finance and public finance flows from multilateral development banks and dedicated climate funds are excluded here because consistent data that allows for disaggregation by groups of countries is only available for bilateral flows. This part of the analysis also excludes technology transfer and capacity building because few NDCs provide quantitative cost information for these types of support (see Section 4.2); quantitative information on support flows is not available; and support for technology transfer and capacity building is often included under climate finance.

For the limited number of NDCs that include both cost indications and conditions, Section 4.4 also compares finance requests with support received. Apart from this limited subset, it remains unclear what proportion of partly conditional NDCs needs to be financed through international support (see Section 4.2), and in our comparison we therefore assume full instead of partial conditionality. Given these data limitations, we only make provisional observations rather than drawing conclusions.

Finally, in order to understand the equity of the conditions (element 2), we compare the NDCs' conditions with the Paris Agreement's prioritization of support towards LDCs and SIDS (see Table 1). We use this as our equity benchmark for three reasons. First, this priority provision reflects a view on equity that is widely shared by both contributor and recipient countries. Second, these priority provisions largely align with the theoretical literature on equitable allocation that tends to prioritize the most vulnerable and least capable countries (see Section 2.1). Third, we did not want to base our analysis on a specific normative model of emission or finance allocations, given lack of scholarly consensus about which model is preferable (see Kartha et al., 2018).

4. Results

Across the 136 countries that make their NDCs conditional upon at least one type of support, capacity building is the most frequently requested type of support (113 NDCs), followed by mitigation finance (110), technology transfer (109) and adaptation finance (79). Considerably more countries request mitigation finance than adaptation finance, and the average amount requested per country is also larger for mitigation finance (see Section

4.2). While this appears inconsistent with developing countries' calls for more balanced allocation of finance between adaptation and mitigation, it aligns with previous UNFCCC negotiations on the scope and content of NDCs and with provider countries' preference for mitigation finance (see sections 2.1 and 2.3). In relation to technology transfer conditions, a majority of countries requests transfer of both mitigation and adaptation technology (70), with 37 countries requesting mitigation technology only and two countries (Peru and Tonga) requesting adaptation technology only. In the following subsections, we discuss the extent to which the conditions put forward in NDCs are in line with the assumptions outlined in Section 3.

4.1. Clarity of conditions in NDCs

The NDC Explorer classifies NDCs as being 'fully conditional' (the proposed contribution will only be realized if support is provided), 'partly conditional' (a part of the contribution will be realized with own efforts, but full implementation requires external support), as 'mentioning' a specific type of support (without indicating that its provision is required for implementation), or as not mentioning support. However, in many cases it is difficult to discern whether a contribution is partly or fully conditional, or whether the country simply views the provision of support as desirable. Countries may, for example, use ambiguous language that does not allow distinguishing the conditional from the unconditional part of the contribution (e.g. Egypt), propose a clearly conditional contribution followed by additional measures without stating their conditionality (e.g. Honduras), or acknowledge that further analysis is needed before identifying what part of the contribution will be implemented with domestic funding (e.g. Kenya, Mongolia). Sometimes, contradictory indications of conditionality appear in different sections of the NDC (e.g. Kiribati). Further evidence is provided in the next sections. It can be concluded that the clarity of the conditions in NDCs is often low, which can compromise the feasibility of implementation.

4.2. Cost estimates in NDCs

Could all conditional NDCs be achieved through existing pledges for support? This section first analyses the cost estimates in NDCs for mitigation and adaptation against the conditionality of NDCs to obtain an indicative value for the cost of implementing conditional NDCs. These estimates should be treated with the utmost care. Their quality varies, for four main reasons. First and foremost, there are large differences in their level of precision. Some countries such as India and Iran present general aggregate cost estimations of unknown origin, whereas others provide detailed breakdowns. Palestine, for example, itemizes its adaptation contribution into 81 projects with detailed cost estimates. Second, the implementation periods of the NDCs vary. Most countries' contributions extend until 2030, whereas some end in 2025 (including the United States and Brazil) or have multiple end years (including South Africa and Senegal). Third, cost estimates are partial: many NDCs include estimates for some sectors only. For example, Morocco states that its adaptation costs are at least $35 billion for the water, agriculture and forestry sectors and describes other sectors without cost estimates. Fourth, the cost amounts vary widely:18 NDCs include mitigation cost estimates below $1 billion, whereas South Africa ($1380.5 billion), India ($834 billion, partly conditional) and Ethiopia ($150 billion, partly conditional) together make up 78% of the aggregate costs estimates. On adaptation, India ($205 billion, partly conditional), Iran ($140 billion, partly conditional) and Iraq ($136.5 billion) make up 52% of the aggregated cost estimates.

Cost estimates do not necessarily equate to countries' needs for climate finance, and there is only a partial overlap between countries that have conditional NDCs and those that include cost estimates. On mitigation, for example, seven countries mention costs without attaching conditions to them, while 47 countries that do not mention mitigation costs do make their mitigation contribution partly or fully conditional upon financial support (see Table 2 and Figure 1).

The fourth column in Table 2 indicates the average costs of implementation for those NDCs that are conditional and include a cost indication. For example, the average costs of NDCs that are *fully* conditional on adaptation finance is $1.1 billion, based on cost estimates of nine NDCs.

If these average costs are extrapolated for the partly or fully conditional NDCs that do not include cost indications, the total costs of implementing all conditional NDCs would be $4.1 trillion. Climate finance needs will be

Table 2. Cost estimates, conditionality and extrapolated aggregated costs of implementation (based on Pauw et al., 2016).

	Number of NDCs with cost estimates	Number of NDCs with conditions	Average costs of conditional NDCs (billion $)	Total costs when extrapolating average cost indications to all conditional NDCs (billion $)	Proportion of costs covered by international climate finance pledges*
Adaptation	60	• 67 partial (38 with cost estimates) • 11 fully (9 with cost estimates)	• partly conditional: 19.3 • fully conditional: 1.1	1305.9 (1293.7 for partly conditional NDCs and 12.1 for fully conditional NDCs)	• partly conditional: 23.2% • fully conditional: 100%
Mitigation	70	• 93 partial (52 with cost estimates) • 17 fully (11 with cost estimates)	• partly conditional: 29.5 • fully conditional: 2.8	2793.1 (2746.2 for partly conditional NDCs and 47.4 for fully conditional NDCs)	

Note: The average cost of fully conditional contributions is lower than that of partially conditional contributions because the former are requested predominantly by SIDS and LDCs, which are typically smaller countries and/or smaller economies.
*Assuming $1 trillion climate finance is available for NDC implementation from 2021 to 2030 (as outlined in Section 3).

lower, because a proportion of the costs of partly conditional NDCs is financed domestically. The exact proportion remains unclear for most countries. Mongolia, for example, states that international support needs to cover 80% of its stated $3.4 billion of adaptation costs, but also that further analysis is needed to identify the required support for the $3.5 billion mitigation cost estimate. Twenty-eight countries indicate what proportion

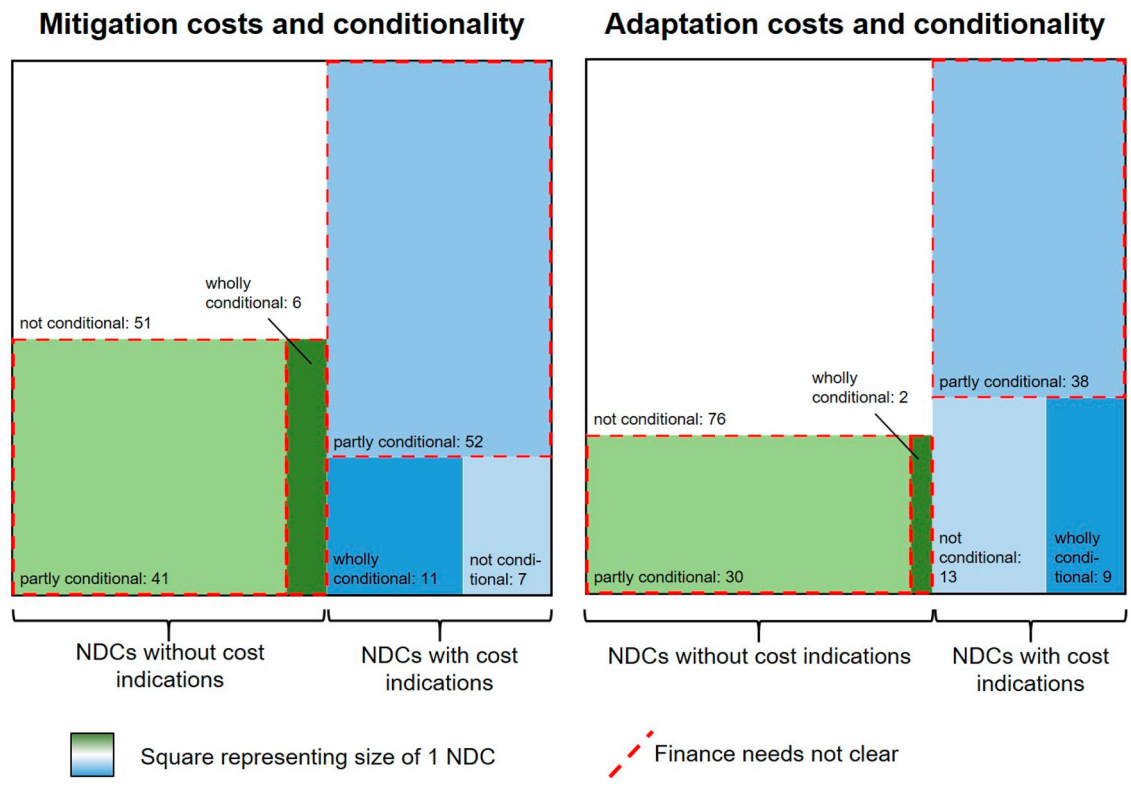

Figure 1. Tree charts showing the number of NDCs that include cost estimates (in blue) and that are conditional upon support, for mitigation (left) and adaptation (right). Based on data from Pauw et al. (2016).

of their partially conditional mitigation and/or adaptation costs need to be covered through international support. Their average indicates that 81% of the costs need to be covered by climate finance. Extrapolating this percentage for all partially conditional NDCs is arguably far-fetched but would result in an indicative total support requirement of $3.3 trillion. Using any other proportion for extrapolation that diverges from this 81% figure (e.g. 50%, or lower and upper bounds) would be arbitrary.

As explained in Section 3, in order to understand whether international support can cover all conditional NDCs, this paper assumes that the maximum available amount of international support for NDC implementation is $1 trillion. This would be sufficient to cover the total costs of fully conditional NDCs as well as 23.2% of the aggregated costs of all partly conditional NDCs.

This percentage is probably insufficient to meet NDC implementation needs. On the one hand, the UNFCCC calls on developed countries to meet the 'agreed full incremental costs' only (Article 4.3), meaning the mitigation or adaptation component of an investment. This could reduce the climate finance needs to implement conditional NDCs considerably. However, it is challenging for countries to 'agree' on the incremental component of project costs or to determine them analytically (Bouwer & Aerts, 2006). On the other hand, while climate funds such as the Green Climate Fund as well as developed countries (e.g. through the NDC Partnership) aim to support NDC implementation, it is unlikely that all climate finance will be earmarked for this purpose. Furthermore, this section might underestimate NDC implementation costs. Most countries do not include cost estimates for technology transfer and capacity building, even though these are often a condition for NDC implementation (see Section 4.4) and despite the negotiation position of the developing countries that capacity building and technology transfer are not part of climate finance (Lehr et al., 2019).

In summary, the costs of implementing all conditional contributions put forward by countries that are eligible to receive support are too high to be covered by existing pledges of support from developed countries, even in the unlikely event that the entire annual $100 billion target were spent on NDC implementation. This limits the feasibility of implementing all conditional NDCs.

4.3. Eligibility for support

All the countries that submitted conditional NDCs are non-Annex I countries eligible for support under the Paris Agreement, with the exception of Turkey which made its NDC conditional upon technology transfer. Parties have recognized Turkey's special circumstances as an OECD member state at an early stage of industrialization, and have thus confirmed its eligibility to receive support. However, this arrangement extends 'at least until 2020' (UNFCCC, 2015b, Dec. 21/CP.20), meaning Turkey might not be eligible under post-2020 implementation of the Paris Agreement. Consultations are currently continuing on whether to extend Turkey's eligibility post-2020 (Schneider, 2017). At the UN climate negotiations in Katowice in 2018, Turkey repeatedly and unsuccessfully called for its removal from the Annex I list of developed countries so that it could receive funding (Climate Tracker, 2018).

In addition, countries might not be eligible for support because of international sanctions. Iran received hardly any adaptation and mitigation finance in the period 2013–2016 (OECD, 2018b) and made its NDC conditional upon the removal of international restrictions and sanctions. The UN Security Council lifted its sanctions on Iran in 2016 (UN Security Council, 2017). North Korea also makes its NDC conditional upon all three types of support, but it is still subject to financial sanctions by the UN and has received less than $1 million in adaptation finance in the period 2013–2016 (OECD, 2018b).

Developed countries' incentives to provide support to developing countries may also be influenced by whether potential recipient countries are on the OECD DAC's list of countries eligible for ODA. For example, Uruguay, Chile and Seychelles made their NDCs conditional upon receiving mitigation finance; and Bahamas and Oman made their NDC conditional upon receiving adaptation finance, but none of these countries are eligible to receive ODA. However, ODA eligibility does not formally restrict the eligibility of countries to receive support under the UNFCCC. For instance, the Global Environment Facility, in its role as an operating entity of the UNFCCC's Financial Mechanism uses the eligibility criteria decided by the COP rather than ODA eligibility (GEF, 2018).

In summary, eligibility to receive climate finance does not directly compromise the feasibility of the implementation of conditional NDCs, with the possible exception of Turkey. Indirectly, however, other factors such as sanctions and ODA eligibility might adversely affect feasibility in the context of the funding gap as described in Section 4.2.

4.4. Compatibility with current practice

Figure 2 below compares the proportion of countries in each country group that (i) make their NDCs conditional on mitigation or adaptation finance and (ii) receive each type of finance. Two trends are apparent across both types of finance. First, while the likelihood that a country will make its NDC conditional decreases with income, this trend does not clearly match the allocation of existing support, where only high-income countries are noticeably less likely to receive support than other income groups. Upper-middle income countries show the biggest gap between requests and receipts. Second, the share of countries that make their NDC conditional is always lower than the share of countries that have received support for mitigation or adaptation (2013–2016) for every country grouping except for mitigation finance received by high-income countries. One possible reason for this difference are the data limitations mentioned in section 3, which mean that we can only compare whether (not how much) support has been received or requested. In Figure 2, a country is counted as receiving support as long as the dollar value of support received is greater than zero, even if the amount is trivial compared to the size of the country's economy or population. Introducing a minimum monetary threshold when assessing whether a country has received support would, however, add an element of arbitrariness into the comparison.

Beyond these common trends, some differences emerge between mitigation and adaptation finance. One hundred and ten countries make their mitigation contribution conditional on receiving mitigation finance. These countries comprise 83% of the 133 countries that received support for mitigation in 2013–2016. In

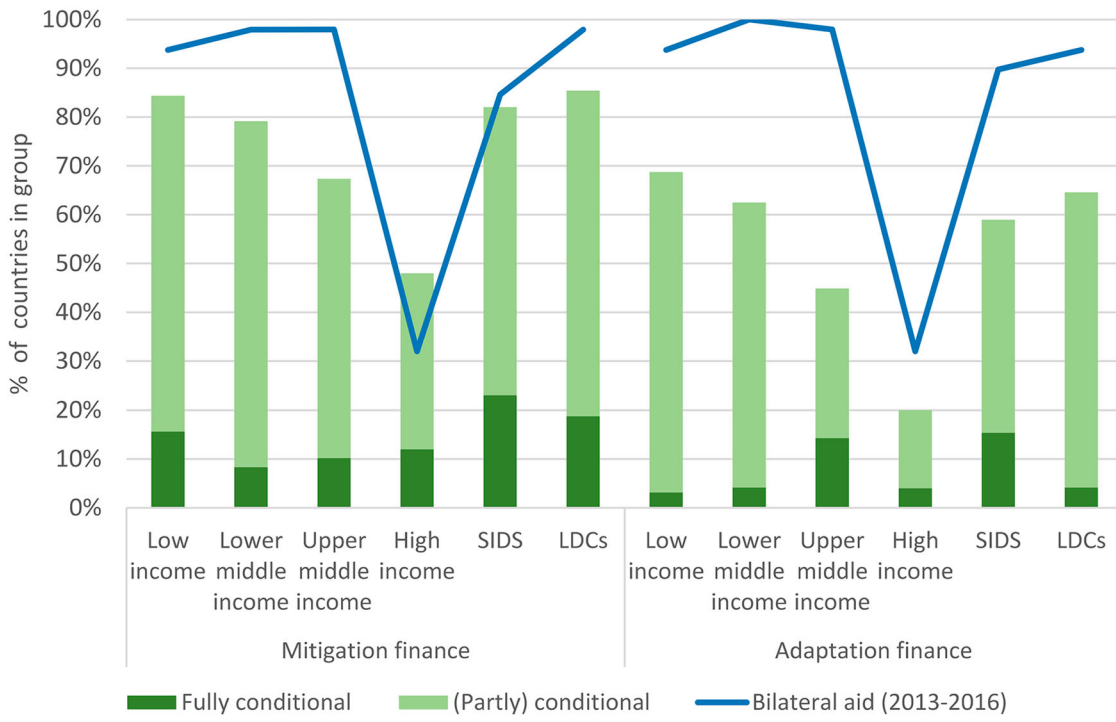

Figure 2. Percentage of countries per group that make their NDCs conditional on mitigation or adaptation finance, compared to percentage of countries per group that are recipients of existing flows.

contrast, only 79 countries make their adaptation contribution conditional on receiving adaptation finance. This is only 59% of the 134 countries that received support for adaptation in 2013–2016. Accordingly, the gap between requests and receipts of adaptation finance is large across almost all country groups.

Bearing in mind the data limitations outlined in Sections 3 and 4.2, three further observations can be made for both mitigation and adaptation when exploring how cost estimates of conditional NDCs relate to bilateral climate finance received (see also the supplementary online material). First, in general, the cost indications for the NDC implementation period (2021–2030) are far above the levels of support that countries have received (2013–2016). Second, it is not possible to detect clear trends among LDCs and SIDS or other developing countries when requests and receipts are compared. Third, the lack of such clear trends is exacerbated by prominent outliers. On adaptation, for example, Iran is the only country that includes a very high conditional cost indication but has hardly received any finance (as explained in Section 4.3). India, and to a certain extent also Pakistan, have both high partly conditional cost indications and received high aggregate amounts of support, but both receive relatively little on a per capita basis. On a per capita basis, outliers Tunisia and the Dominican Republic are among the largest recipients of adaptation finance but put forward relatively low conditional cost indications for adaptation in their NDCs. On mitigation, outliers include India, which both receives the largest amount of mitigation finance and has the highest cost indication; and Bangladesh and Morocco, which have a relatively low cost indication compared to the mitigation finance they have received. On a per capita basis, the outliers are all smaller economies. While Botswana and Djibouti have relatively high cost indications compared to receipts, Tuvalu and Nauru receive relatively large amounts of mitigation finance compared to their cost indications.

In summary, the number of conditional NDCs is much lower than the number of countries that have received climate finance over recent years, particularly for adaptation. This may seem positive for feasibility if it means that supporting conditional NDCs requires scaling up support to existing partner countries rather than developing entirely new partnerships. Paradoxically, however, this may also reduce feasibility as scarce climate finance resources will need to be divided over a group of countries far larger than just those with conditional NDCs. Divergent patterns of requests and receipts across income groups may also reduce feasibility if supporting NDCs requires a significant shift in provider countries' geographic priorities for allocating climate finance.

4.5. Equity

To assess the extent to which the conditions in NDCs could enhance equity, we compare their geographic distribution with the groups prioritized for support in the Paris Agreement (LDCs and SIDS). Figure 3 below displays the types of conditions developing countries attach to their NDCs according to their membership of these priority groups.

Several broad trends emerge across all types of support. First, a larger proportion of LDCs and SIDS include conditions than the other developing countries. This is roughly consistent with principles of equity, although the proportion of other countries making their NDCs conditional remains high. Second, although a higher proportion of LDCs have conditional NDCs overall (when partly and fully conditional NDCs are combined), SIDS have the largest proportion of *fully* conditional NDCs. The Paris Agreement does not suggest any relative priority of supporting LDCs compared to SIDS, although one could infer that a country that is both an LDC and a SIDS would be accorded somewhat higher priority compared to a country that is one but not the other (e.g. a high-income SIDS or a non-SIDS LDC). Next, we turn to trends relating to individual types of support.

4.5.1. Mitigation finance

Overall, 64 (or 58%) of the countries putting forward mitigation finance as a condition are either LDCs or SIDS (or both). When looking only at NDCs that are fully conditional upon mitigation finance support, the role of LDCs and SIDS status is even more pronounced. Out of the 18 countries making their NDCs fully conditional on mitigation support, 16 are LDCs or SIDS. Looking beyond the groupings prioritized for support in the Paris Agreement to gain a more nuanced picture, it is evident from Figure 2 that lower-income countries are more likely to submit conditions on mitigation finance than higher-income countries. Of the 18 developing countries that do

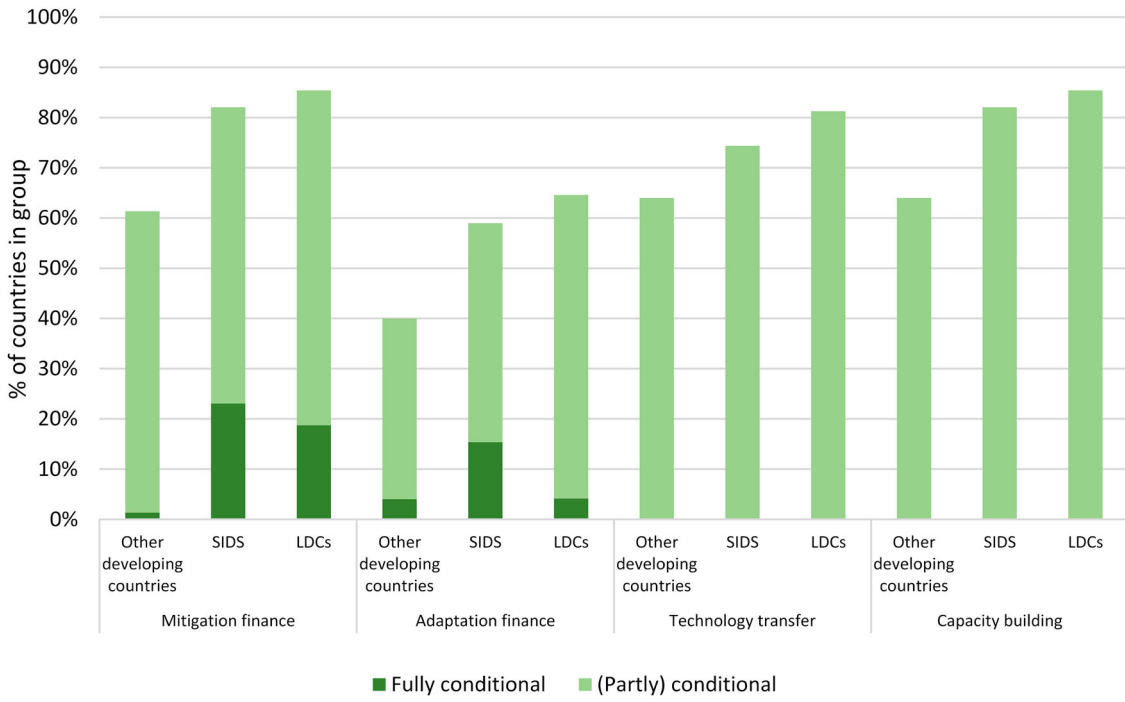

Figure 3. Percentage of priority groups under the Paris Agreement and other developing countries that include conditions for each type of support in their NDCs.

not mention mitigation finance in their NDCs, 14 are high or upper middle-income countries. This is consistent with the solidarity justification for allocating support to countries with the least capacity (see section 2.1).

Nevertheless, seven out of the nine SIDS making their NDCs fully conditional (and 13 out of the 23 SIDS making them partly conditional) on mitigation support are classified as high income or upper middle income. They may thus have the capacity to address climate change mitigation through domestic resources to a certain extent. In their NDCs, these countries tend to justify their conditions based on their high vulnerability and small share of global emissions. While the former justification is more applicable to adaptation finance than to mitigation finance, the latter justification is in line with the argument that those who have contributed the most to global GHG emissions have the highest responsibility and should support those who have contributed the least (see section 2.1).

4.5.2. Adaptation finance

Sixty-two per cent of the countries that put forward conditional adaptation contributions are SIDS and LDCs. As with mitigation finance, the proportion of SIDS and LDCs that include conditions is much higher than the proportion of other developing countries that do so. This aligns with the prioritization of these countries in the Paris Agreement. In addition, as shown in Figure 2, lower-income countries are more likely to submit conditions on adaptation finance than higher-income countries. Responding to these conditions would be in line with equity-based justifications of solidarity and responsibility. However, in contrast to the responsibility justification, the solidarity justification is less compelling in the case of a high-income (and therefore potentially high-capacity) SIDS like the Bahamas, which put forward an NDC that is fully conditional on adaptation finance. Similarly, in the context of the financing gap (see Section 4.2) solidarity would not justify placing a high priority on supporting the fully conditional NDCs of six upper-middle income countries (among which four are SIDS) or the partly conditional NDCs of two high-income countries (Oman and Venezuela).[9] This is despite these countries eligibility for support (see Section 4.3).

4.5.3. Technology transfer

Thirty-eight LDCs and 29 SIDS make their NDC conditional on technology transfer, as do 50 middle-income countries. The fact that 79% of the LDCs make their NDCs conditional on receiving technology transfer is in line with the prioritization in the Paris Agreement, albeit through the preamble, rather than the operative text of Article 10 on technology transfer which only refers to 'developing countries' (see Table 1: SIDS are not mentioned in the preamble). However, the difference between the proportion of priority and non-priority countries seeking technology transfer is not as large as for other types of support. Although vulnerable countries could be expected to request adaptation-focussed technologies, the majority of LDCs and SIDS request technology transfer support for both mitigation and adaptation, and where this is not the case, the focus is on mitigation. This may reflect that existing flows of finance continue to prioritize mitigation technologies overall.

4.5.4. Capacity-building

The bulk (58% or 65 countries) of NDCs with capacity-building conditions are put forward by LDCs and SIDS. While this is largely consistent with equity priorities under the Paris Agreement, it is notable that six of the SIDS that include capacity-building conditions in their NDCs are high-income countries (Antigua and Barbuda, the Bahamas, Bahrain, Barbados, Cook Islands, and Niue). In addition, six other high-income countries include capacity-building conditions in their NDCs (Bahrain, Oman, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela). In the latter group of countries, oil makes up a substantial share of exports and government revenue. Fossil-fuel dependent countries may be inclined to argue for capacity-building support and technology transfer, because assistance for economic diversification to manage the domestic economic effects of ambitious international mitigation efforts (the 'impacts of the implementation of response measures' in UNFCCC parlance) is not readily classed as mitigation or adaptation support (compare UN, 1992, Article 4.8 and 4.10, 2015a, Article 4.15). Given the economic resources at their disposal, we would not expect high-income countries – particularly non-SIDS – to be a high priority to receive support based on the solidarity justification outlined in section 2.1, although the responsibility justification could warrant capacity building *for adaptation* in the SIDS among them.

In summary, the country groups prioritized in the Paris Agreement are more likely to make their NDCs conditional than other developing countries. However, a substantial number of countries that are neither SIDS nor LDCs make their NDCs conditional. Importantly, these countries remain eligible for support (see Section 4.3), but even with scaled-up financial resources difficult allocation choices will need to be made, and the Paris Agreement's provisions on priority groups offer valuable guidance in making those choices.

5. Conclusion and recommendations

This paper analyzed the feasibility and equity implications of conditional NDCs. Conditionality is common in NDCs, but it is often neither well defined nor described. This paper demonstrates that the costs of implementing all conditional contributions put forward by countries that are eligible to receive support are too high to be covered by support from developed countries, even in the unlikely event that the entire annual $100 billion that developed countries have pledged to mobilize were spent on NDC implementation. This is despite the fact that the number of conditional NDCs is much lower than the number of countries that have received climate finance over recent years, in particular for adaptation.

Although a few emerging economies (Brazil, China, India, Chile and Panama) mention in their NDCs that they are planning to provide support, it is unlikely that such 'other Parties' (UNFCCC, 2015a, Article 9.2) will fill the financing gap. Similarly, even though private sources have a growing role in scaling up climate finance, the need for public (non-commercial) resources remains large, and it is unlikely that the finance gap can be closed by other contributors such as cities or philanthropists or (at least in the short term) by innovative sources such as proposed levies on international transport.

At the same time, the conditions that countries put forward in their NDCs are broadly consistent with widely held conceptions of equity in the sense that country groups prioritized in the Paris Agreement are more likely to make their NDCs conditional. However, there is no guarantee that the most feasible scenario will also be the

most equitable one. Tensions could arise between feasibility and equity if, for example, countries that provide support prefer to prioritize upper middle-income countries, even though equity suggests that LDCs and SIDS should be accorded higher priority. Tension could also arise when the allocation of support based on solidarity towards countries with the lowest capacity does not justify a prioritization of support towards higher income countries that are otherwise eligible to receive support and vulnerable to climate change. This could be an issue in particular for high-income SIDS.

In summary, it is too early to say whether conditional NDCs will become the Achilles heel of the Paris Agreement. However, until 2025, when a new climate finance floor is due to be negotiated, hard choices need to be made on how climate finance can be targeted equitably and cost-effectively to support NDC implementation. Equally important, it remains uncertain how successive NDCs can become more ambitious without more clarity on how higher ambitions will be financed. Thus, conditional NDCs remain both an opportunity and a potential vulnerability for ambition and equity.

So how to make progress from here? We conclude with four recommendations for action.

First, *Parties to the Paris Agreement should build shared understandings about what contributions could be conditional before 2024*. The Katowice Climate Package provides guidance on NDC formulation that is mitigation-centric and does not address the issue of conditionality. However, it does include a decision to continue consideration on guidance in 2024. Given that the Paris Agreement is premised on universal participation, it is reasonable to expect that most Parties' NDCs would at least have an unconditional core. To reflect the equity issues outlined in sections 2.1 and 2.2, countries such as LDCs and SIDS could include less demanding unconditional contributions, such as qualitative or costless contributions. Burkina Faso's NDC, for example, already includes negative – and zero-cost contributions. At the very least, the continuation of existing climate policies should be treated as unconditional components.

Second, in order to implement current NDCs, *countries requesting support should add substance to their support needs*. To increase the likelihood of attracting support, developing countries should set out credible cost estimates and have sufficiently detailed and feasible investment plans in place. This issue can be addressed, for example, by examining and revising the existing plans and strategies that often underlie the NDCs (see Pauw et al., 2016).

Third, *provider countries should scale up capacity-building support for preparing future NDCs*. In the Katowice Climate Package, parties decided to provide capacity building for developing countries to prepare future NDCs in general, and as part of the LDC Work Programme (FCCC/SBI/2018/9/Add.1) (see UNFCCC, 2018). Such capacity building should also support the identification of low-cost contributions as well as support for estimating implementation costs. To maximize prospects for feasibility and equity, the cost estimates should both be tailored to recipient countries' circumstances and allow for comparability across NDCs.

Finally, *developed countries should orient current support, and climate finance in particular, explicitly towards supporting developing countries' efforts to implement their NDCs*. Relatedly, in their NDC updates, developed countries – and any other countries in a position to provide support – could add an informative (and preferably quantified) outline of planned provision of support in their NDCs. Describing intended provision of support would help to address equity and would have two other concrete benefits. It would acknowledge the fact that support is a contribution towards achieving the objective of the Paris Agreement; and it would reassure developing countries that it is possible for them to raise the ambition of successive NDCs and implement them successfully.

Notes

1. Once a party to the UNFCCC has ratified the Paris Agreement, its Intended Nationally Determined Contribution (INDC) automatically converts into a Nationally Determined Contribution (NDC) unless that party decides otherwise (UNFCCC, 2015a, Dec. 22). This paper always refers to the latest document available.
2. In the UN climate negotiations, these three together are known as 'means of implementation' or 'support'. This article uses the latter term.
3. Some NDCs set political conditions that lie outside of the UNFCCC's mandate and outside the scope of this article, including political independence (Palestine) and the 'reinstatement … of the prevailing national circumstances' before the wars in Syria and Iraq and the consequent refugee crisis (Lebanon).

4. CBDR-RC reflects the political consensus that countries have a common responsibility to combat climate change and the adverse effects thereof, but that states may adopt and implement differing commitments based on their diverse circumstances and capacities, their historical contributions to GHG emissions and their specific development needs (see Pauw et al., 2014). The Paris Agreement introduces a dynamic element to CBDR-RC by adding the qualifier 'in the light of national circumstances': as circumstances evolve, so too will the responsibilities of States (Rajamani, 2016).
5. All monetary values in this paper are in US$.
6. This pledge was formalised in the Cancun Agreements in 2010. This paper will refer to this as the '$100 billion target'.
7. Some parties (e.g. Marshall Islands and Papua New Guinea) also made their pledges under the Copenhagen Accord conditional on international support.
8. Parties have agreed to set, before 2025, a new collective quantified goal from a floor of $100 billion per year. The deliberations for this new collective quantified goal will start in 2020 (UNFCCC, 2015a, 2018). Since the outcomes of these negotiations are unknown, this paper takes the $100 billion target as the relevant benchmark.
9. Of course, Venezuela's classification as a high-income country is probably no longer relevant given its current economic hardship.

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